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ABSTRACT

This document outlines an approach to collecting and processing data for both professional development and course improvement. The approach, which combines elements of evaluation and research, is referred to as an instructional audit. Data collected during the audit addresses the following basic questions: (1) What does the teacher intend to teach? (2) What does the teacher actually teach? (3) What does the student perceive he learns? (4) What does the teacher perceive the student learns? These four audit questions give the audit a systematic, comprehensive quality not shared by many other evaluation and observation schemes. The audit's other atypical characteristics include its emphasis on curriculum content and its provision for collecting student perceptions of learning. How closely a teacher's perception of what a student learns corresponds to the student's perception of what she or he learns, and to what extent does the teacher actually teach what he or she intended to teach, are the fundamental questions the instructional audit is designed to answer. (JD)

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PROFESSIONAL DEVELOPMENT AND COURSE IMPROVEMENT THROUGH THE USE OF THE INSTRUCTIONAL AUDIT

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While numerous tools have been developed to assist teachers in understanding what goes on in their classrooms, four of them deal systematically with course content and student learning. Instead most of these instruments focus on teaching methods, teacher "moves," student behavior, and general issues of classroom management. I intend to outline an approach to collecting and processing data for both professional development and course improvement. The approach, which combines elements of evaluation and research, is referred to as an instructional audit, or audit for short. The audit derives from the same conceptual base and investigative spirit as Elliot Eisner's educational connoisseurship and criticism. Eisner has written,[1]

> I start with the assumption that the improvement of education will result not so much from attempting to discover scientific methods that can be applied universally to classrooms throughout the land, or to individuals possessing particular personality characteristics, or to students coming from scientific ethnic or class backgrounds, but rather by enabling teachers and others engaged in education to improve their ability to see and think about what they do.

The audit was field-tested during the year 1976-1977 using interns with the Hoover-Stanford Teacher Corps Project and veteran teachers in the San Francisco Bay area. More will be said of these field-tests in subsequent chapters. The present chapter outlines the rationale for the audit and its five stages.

What is an Instructional Audit?

Simply put, an instructional audit is a set of procedures, based on four fundamental research questions, that are used to guide the collection of data concerning what teachers teach and what students learn. The raw data offer a profile of the material covered in a given course over a particular period of time. A typical audit covers a two-week period of time. When content analyzed, the data provide information of value in assessing teacher effectiveness.

The term "audit" is used so that the approach will not be regarded exclusively as a set of evaluation procedures -- means by which decisions

can be made to retain teachers or advance students. The audit can provide data relevant to teacher and student evaluation. Nonetheless, its primary functions are professional development and course improvement. It is well suited for on-going in-service activities, collegial evaluations, and instructional planning. The person who collects and processes audit data is called an auditor, and he or she can be thought of as a teacher's personal consultant.

While the adjective "instructional" is used to modify audit, it is not intended to preclude curricular matters. The audit is concerned with both the curricular and the instructional dimensions of professional development and course improvement. As such, it takes its cue from the work of Walter Doyle, who observes that there have been too few attempts "to integrate curriculum effectiveness studies... into teacher effectiveness formulations...."[2]

Data collected during the audit address the following basic questions (henceforth referred to as "audit questions"):

1. What does the teacher intend to teach?
2. What does the teacher actually teach?
3. What does the student perceive he learns?
4. What does the teacher perceive the student learns?

Of these audit questions and their derivatives more will be said shortly. Before progressing further, though, it is essential to ask why, amidst all the contemporary research on classrooms and teaching, a new approach is needed. I shall respond to this question by considering each of the four audit questions separately. I maintain that 1) this quartet of seemingly fundamental questions has received surprisingly little systematic attention from researchers and 2) when the questions have been asked, they have been handled in a piecemeal, rather than a comprehensive fashion. The four audit questions derive their utility for professional development and course improvement from the fact that they are asked in concert by a single auditor rather than individually by different researchers in different settings at different times.

A further justification for the audit derives from the fact that most professional development activities are highly generalized. The audit attempts to deal with the specific elements of a particular teacher's course. Personalizing professional development in this way may require more time, but the potential benefits seem to justify the investment.

What Does the Teacher Intend to Teach?

This first audit question concerns the determination of intended learning outcomes. Evidence of intended learning outcomes can be found in a variety of places, including course syllabi, programmed learning materials, and lesson plans. In almost every instance in which teachers work with students, the former possess some kind of intentions.[3] The intentions are not always written, carefully sequenced, or even readily repeatable, but they exist and doubtless exert some influence over what is actually taught. Benjamin Bloom insists that "no teacher can work with a group of students...without some model or framework to guide him with respect to the learning desired or expected of his students."[4]

Considerable attention has been devoted of late to instructional objectives and intended learning outcomes, but the focus of this interest has not necessarily centered on what the teacher himself or herself intends to teach. Typically teacher educators speak of providing sets of predetermined objectives for classroom teachers. School districts are drafting their own lists of graduation requirements and student competencies. The assumption with these situations is apparently that teachers intend to teach the objectives they are expected to teach by administrators and curriculum developers. The instructional audit, however, is premised on the belief that teachers have their own notions of what they intend to teach. Consulting lists of packaged objectives will not reveal much about classroom realities.

On an instructional audit, a teacher initially "briefs" the auditor on what he or she intends to teach and intends for students to learn during the audit period. These intentions subsequently serve as baseline data against which can be compared with what the teacher actually teaches and what students perceive they have learned. Unlike evaluation

models, however, discrepancies between intended teaching and actual teaching are not automatically treated as evidence of ineffective instruction. Certainly occasions can be anticipated when a teacher would be unwise to insist on carrying through his or her intentions. The data simply constitute data about a given instructional period that can be reviewed by the teacher and the auditor.

Despite the obvious importance of teacher intentions in understanding classrooms and planning for course improvement, little research has dealt with the subject. Sometimes evaluation studies provide for collecting data on teacher's intentions, but rarely are the data analyzed in such a way as to be useful for professional development purposes.

One of the few studies to zero in on the teacher's involvement in instructional planning and the development of objectives was conducted by John Zahorik.[5] Criticizing previous research that narrowly looked at how teachers should plan rather than how they actually determine what to teach, he undertook to study the actual planning decisions made by 194 teachers at various levels. Zahorik found that most teachers make decisions about course content (70%) and objectives (56%) as part of their planning, but that they also make decisions about learning activities (81%), instructional materials (56%), evaluation (35%), diagnosis of student abilities (25%), organization of the learning environment (21%), and instructional behaviors (16%). When it comes to which planning decisions teachers make first, decisions involving objectives were mentioned by only 28%. Fifty-one per cent of the teachers said they decide about content first. In addition to its value in the general area of curriculum research, Zahorik's study suggests to skeptics that many teachers do think about content and objectives when they plan. It is important for those interested in professional development and course improvement to take cognizance of teachers' intentions.

What Does the Teacher Actually Teach?

Can it be assumed that what the teacher intends to teach is congruent with the material he actually covers in class? One would think that with all the tapings and transcriptions of lessons in the past decade of educational research that someone would have taken the time to see if teachers taught what they thought they taught or intended to teach. As it is, few

researchers even bother with the curriculum content of lessons, much less the discrepancy between intentions and actualities. There is simply too little research on what teachers actually teach to know whether or not it corresponds to what they plan to teach. Walter Borg, however, has discovered that what teachers do and what they think they do often differ.[6] Hence, there may be some reason to feel that my doubts are not arbitrary.

Numerous attemtps have been made in the past two decades to code teacher remarks in the classroom. Barak Rosenshine offers an excellent review of the more well-known of these coding systems.[7] Most of them have concentrated on aspects of classroom communication other than specific subject matter content. One system by J. C. Fortune did recognize the need to anlayze the subject matter content of teacher remarks, but it ignored such critical dimensions as accuracy, comprehensiveness, intensity, and organization (sequence).[8] In a more recent review of research on teaching, Rosenshine dealt specifically with studies of the content of instruction. He writes,[9]

> It would appear, intuitively, that the amount of content taught would be strongly related to achievement. Despite the obviousness of this idea, there has been relatively little research on the topic and a good deal of research that did not take it into account. Although many studies have been conducted relating teacher behaviors and student achievement, only a few of these have attempted to measure the amount of content taught and to use such a measure as a predictor of achievement. Likewise, items on content covered do not appear on teacher evaluation checklists.

Of the handful of studies concerned in some way with what the teacher actually teaches, several appeared particularly useful. James Gallagher has outlined a "Topic Classification System" for looking at classroom interactions.[10] Based on the learning theory of J. P. Guilford, the system permits the analysis of intereactions in terms of the level of instructional intent (content, skills), the level of style (activity, description, explanation, evaluation-justification, evaluation-matching, and expansion), and the level of conceptualization (generalization, concept, and data). The system's only apparent shortcomings are its lack specificity (content is classified into gross categories) and its

impracticality for local professional development purposes.

A second promising study was conducted by Beverly Armento.[11] She hypothesized that a relationship exists between what is being taught in class and productive teacher behaviors. In the actual investigation, Armento found that student gain scores were higher in classes where teachers "present accurate, relevant knowledge, where they give concept definitions, give concept examples, and review the main points in the lesson.[12]

One of the most promising efforts to understand the content of lessons have been made by Eisner and his Stanford doctoral students. Working on the brand of qualitative inquiry he has termed educational connoisseurship and criticism, Eisner has directed field studies aimed at portraying, among other things, what is taught and what is not taught in various classroom settings.[13] Eisner has maintained that what teachers fail to teach can be as influential as what they actually present in class. While instructional criticisms have been useful in refining parts of the instructional audit, they generally lack the latter's systematic design, prescriptive potential, and provision for teacher and student perceptions.

Perhaps the research most closely resembling the scope of the instructional audit comes from ethnographers. One study by Warren H. Solomon, was specifically designed as an application of participant observation to the analysis of lesson plans.[14] Solomon focused on the qualitative relationships between how a lesson was supposed to be taught (based on the behavioral objectives contained in a lesson plan) and how it actually was taught. As in the case of the audit, the instructional objectives guided the collection of classroom data. Solomon discovered that the elementary teacher he observed did many things not specified in the original lesson plan. He predicted that studies such as his would be of value to teachers in training, curriculum developers, and researchers. Interestingly, however, Solomon did not suggest that participant observation studies would be of benefit to those being observed.

What Does the Student Perceive He Learns?

In general what the student perceives he learns can be equated with what he perceives he has been taught.[15] Student perceptions of learning

would seem to be of obvious value in the professional development of teachers as well as course improvement. Unfortunately, the student perceptions of learning that typically are obtained are the kind that can be efficiently collected on teacher-made or standardized tests. Richard Lindeman lists five basic sources of data on student learning: 1) classroom tests, 2) standardized tests of general intellectual ability, special aptitudes, achievement, and personality, 3) pupil's cumulative record card, 4) informal classroom observation, and 5 records of pupil behavior.[16] Nowhere does Lindeman note that worthwhile data may be acquired simply by asking students what they have learned.

Tests, in and of themselves, are not without value. There is little doubt that they retrieve some portion of what a student learns. Nonetheless, tests are open to criticism of various kinds. Christopher Jencks and his coworkers indict some standardized tests for measuring irrelevant information or unintended skills (i.e., an arithmetic test that first requires that a student can read the problems requiring computation) and for assessing guessing ability or speed rather than knowledge.[17] William Spady feels "the nearly monolithic focus on standardized achievement measures in research betrays a lack of imagination within the educational research community."[18] Herbert Walberg echoes Spady's feelings, while calling for more studies that look at learning from the learner's point of view.[19]

To pursue Walberg's suggestion why not ask students to write or verbalize what they feel they have learned during a given period of time? Is asking a student what he or she has learned too simple or naive a procedure for sophisticated researchers? Apparently it is, because few such studies are available. There is the work of Bloom and his graduate assistants in the fifties. Students were asked in retrospect to comment (with the aid of a tape recording) on what they were thinking at a given point during class.[20] This stimulated recall techniques however, did not include asking students what they were learning at the time the tape recording was stopped, only how they were reacting to the mode of instruction at the time.

As indicated earlier, the typical ways of determinging what students learn are tests. Test, though, often include within them the correct answers to questions (as in the case of multiple choice tests) or cues to

assist students in answering questions appropriately. At best, most tests measure a sub-set of what the teacher actually teaches -- that portion that the teacher intends students to learn. It is also importnat, however, to know what students learn that is unintended. Bloom maintains that knowledge of "non-specified outcomes" and undesirable side effects is a valuable component of any evaluation.[21] He is vauge, though, on how to measure such knowledge.

An additional drawback of most tests is the fact that they test students at the level of recognition rather than at the level or recall. It is also important to determine what a student freely recalls having learned. In fact, how a student reconstructs past learnings independent of specific test questions may well provide vital clues to how students process information and organize it for retention. A pilot study I completed using a technique called debriefing reveals that certain students recall very little of what they are expected to learn, recall even this small amount in no apparent order or sequence, and recall concepts more than facts, skills or attitudes.[22] The debriefing technique involves asking individual students what they have learned during a specific period of time -- usually a unit. More will be said of this technique in a later section of this paper.

The point to be stressed in this section is not that conventional tests are inappropriate measures of student learning, only that they are incomplete. Teachers and researchers need to study what students perceive they learn as well as how they respond to direct, convergent test questions.

What Does the Teacher Perceive the Student Learns?

While the previous section contained the suggestion that it may be instructionally desirable for a student to have an opportunity to reconstruct what he has learned in school, the reality of most classrooms is that the teacher alone determines what he has learned. The teacher's perception of what a student has learned can be based on a variety of inputs -- some more objective than others. Much has been written about the influence of subjective factors such as teacher expectations on student achievement in school.

As long as school achievement is based primarily on teacher judgments, it is important that the teacher's perception of what a student has learned is as accurate as possible. If a teacher perceives an area in which students are uniformly deficient after instruction, changes in curriculum and teaching strategy certainly have to be considered. How closely a teacher's perception of what a student learns corresponds to the student's perception of what he or she learns is a valuable item of information. Clearly if there is disagreement in either direction (whether the student perceives he learns more than the teacher does or vice versa), the student's future and the teacher's effectiveness can be adversely affected.

Despite the seriousness of this area of classroom life, an ERIC search of the literature failed to locate any studies dealing with the relationship between these two sets of perceptions. Thomas Good and Jere Brophy reported, however, one piece of research in which teachers consistently perceived students to be making many more decisions than students saw themselves making.[23] Considering this finding and the reputedly large number of unqualified students passed on to the next highest grade each year, it appears that teachers may need to concentrate on how they go about deciding how well students are learning.

The Status of Research on Professional Development and Course Improvement

A review of research in the past twenty years reveals few studies that relate content to professional development and course improvement needs. Decker Walker, in a forthcoming review of curriculum research, indicates that studies of "curricula in action in classrooms" do exist, but he goes on to indicate that they focus on such matters as how teachers plan, the effect of resource limitations, and interactions between students and teachers.[24] Nowhere are to be found the studies of actual curriculum content that Walker along with John Schaffarzick suggested would be more valuable than research on teaching procedures in accounting for student outcomes.[25] Instead, those interested in course improvement must settle for countless studies of classroom interactions, ways of organizing classes for instruction, and comparisons of teaching techniques.[26] It would appear that what is said in class, in terms of curriculum content, is less significant than how it is said, who says it, or how well students remember it at the end of the course.

Besides emphasizing classroom behavior and test results to the virtual exclusion of the content of daily lessons, much recent research has drawn on an impoverished data base. Potentially, data on classroom activities can be obtained from teachers, students, and outside observers, Richard Bloom, James Dunn, and William Morse, however, conclude that very few studies actually tap all three sources.[27] As will be indicated in the following section, the instructional audit attempts to obtain input from all three.

The Instructional Audit: Overview and Collection of Data

As was suggested earlier, the instructional audit is designed to investigate four basic questions, the answers to which are believed to be of value to teachers concerned with professional development and course improvement. These four audit questions give the audit a systematic, comprehensive quality not shared by many other evaluation and observation schemes. The audit's other atypical characteristics include its emphasis on curriculum content and its provision for collecting student perceptions of learning.

Before specifically discussing how audit data is collected and analyzed, it may be helpful to provide an overview of the operations involved in conducting an audit. Readers should bear in mind that an audit involves a relatively significant investment of time and energy; hence, it should not be regarded as an annual exercise for all teachers or every course. There are five phases to an audit:

1. Planning the audit -- Decisions are made concerning the length of the audit, who should collect the data, and who will have access to the results.

2. Data collection -- This phase is divided into three segments: briefing by the teacher on intended outcomes, transcription of actual lessons, and student and teacher debriefing. Data collection is guided by the four audit questions.

3. Initial content analysis -- Data collected in Phase 2 is content analyzed on the basis of specific subject matter categories and more general "units of content."

4. Data comparison -- Using three comparative questions derived from the audit questions, results of the initial content analysis in Phase 3 are used to determine course and/or teacher effectiveness.

5. Secondary content analysis -- The original data collected in Phase 2 is analyzed using specific "course improvement criteria," including content accuracy, comprehensiveness, intensity, and organization.

Specific plans for an audit depend upon the availability of resources (both time and personnel) and the actual purposes of the audit. In some cases, it may be necessary to modify or eliminate particular phases. I have found that an audit of two-week duration -- roughly the time it takes to complete a typical curriculum unit -- is most workable; however, it is not inconceivable to imagine a longer and shorter audits. Regarding the matter of who should conduct an audit, I propose either the use of colleagues, supervisors (where adequate trust exists, or possibly graduate students in education).[28] An individual teacher even can audit himself or herself, though another person should debrief the students at the end of the audit.

Now I wish to review the data collection phase of the audit. As was indicated in the preceding overview, the four audit questions determine what data must be collected

What the teacher intends to teach. To obtain data concerning the teacher's intended learning outcomes, it is possible to analyze lesson plans, course descriptions, tests made up in advance of the beginning of the course, and lists of course objectives. For audit purposes, however, the teacher simply is asked to "brief" the auditor regarding what he or she intends to teach and what students are expected to learn. The auditor transcribes the teacher's remarks verbatim and collects any written material the teacher may proffer. The briefing occurs prior to the commencement of instruction. It also may be necessary at this time to review any textbooks or workbooks to be used during the audit period.

What the teacher actually teaches. The audit does not presume that what the teacher intends to teach is automatically what is taught. To determine what is taught, it is necessary for the auditor (a competent student or the teacher himself or herself are possible data collectors if a colleague or supervisor is unavailable) to record the content covered in every lesson for the duration of the audit. Content is recorded using a form based on categories derived from the initial teacher briefing. In addition, it is desirable for the auditor to note how much time is spent

on particular content items and retrieve any content that may be conveyed in a non-verbal manner (for example, information written on the board or materials distributed to students). A third source of data on what is actually taught are student notebooks. A comparison of a sample of notebooks can provide important clues concerning what information students feel is worth remembering.

What the student perceives he learns. One indication of student learning is the gain score on a pretest/posttest combination. It is my position that such information is valuable, but incomplete. Student responses to many test questions tap learning at the recognition level only. I have developed a technique called "debriefing" to obtain student responses at the recall level.[29] Debriefing involves a series of open-ended questions followed by a period for student elaboration of previous responses. The questions mostly are variations of the first one, "what did you learn during the past unit?" The questions are designed to provide as few external cues as possible. In essence, students are expected to reconstruct a prior learning experience (the one being audited) from memory.

Debriefing should occur at the end of a pre-defined learning experience, but before any formal test is administered. Debriefing after a test can produce confounding or reactive effects. All students can be debriefed or, if time is limited, a random sample. Student responses must be recorded verbatim, and students are asked to inform their classmates of what is being done until after all debriefings are completed.

When debriefing has been attempted in the past, students at first seemed totally unprepared to respond to a broad question such as "what have you learned?" They clearly were accustomed to answering simple, direct, teacher-made questions. With some patience on the part of the debriefer (who might be the auditor or someone else) and assurances that student responses will not be used to determine final grades, students can begin to feel more comfortable about responding.[30] Following the open-ended questions, the debriefer asks students to elaborate on items mentioned earlier. This occasion permits the debriefer to check whether students can expand on highly general or vague responses.

When the debriefing is finished and the responses analyzed for content, the debriefer may share the results with the students. The latter

find such information quite intriguing, a fact that suggests debriefing has instructional as well as evaluaive worth. Debriefing provides an opportunity for students to gain practice reconstructing previous learning experiences and identifying what elements they themselves feel are important enough to recall.

What the teacher perceives students learn. To find out what a teacher perceives a student has learned, one usually consults the student's report card. A grade, however, reveals virtually nothing about a student's specific learning. Occasionally more detailed information can be obtained from anecdotal records or by reading teacher comments on returned assignments. Still, these data rarely contain systematic statements of what students know as a result of completing a given learning experience.

The audit provides for more systematic data collection by requiring that a teacher be debriefed concerning his or her perceptions of what individual students have learned during the period of the audit. While requesting judgments for every student may be impossible, responses for a random sample of students will provide a wealth of information, which in turn can be compared with students' own perceptions of what they have learned. Discrepant perceptions may then be investigated by the teacher. The teacher debriefing also involves questions concerning why students are perceived to have done well or not.

Initial Content Analysis -- Phase 3

Having gathered a large amount of data from the students and the teacher the data are initially processed using a content analysis scheme that categorizes according to "units of content." In other words, all of the data collected in Phase 2 are categorized according to whether they represent one of the following "units of content:"

1. Fact
2. General, unelaborated topic
3. Concept, generalization, rule, or theory
4. General skill
5. Specific skill
6. Attitude, opinion, or personal insight

Frequencies for each unit of content are tabulated in order to present an overview of the course and students' perceptions of what they have learned. Teachers can see what proportion of their instruction involves particular kinds of content.

In addition to classifying what is taught according to the six generalized units of content, content along with the student debriefings are analyzed in terms of the intended learning outcomes obtained in the initial teacher briefing. This analysis of actual names, dates, concepts, rules, and other items is somewhat unique in the research on course improvement. Perhaps for the first time, it will be possible to compare the actual subject matter taught in a course with the subject matter intended to be taught. An accurate idea of exactly how much subject matter a teacher covers in a given period of time also will be possible.

Comparison of the Data -- Phase 4

Once the data is content analyzed, it can be used to answer three comparative questions that yield information concerning the effectiveness of the course and the teacher being audited (see Table 1). These three questions deal with teacher follow-through, the scope of student recall, and teacher judgment of student learning.

Teacher follow-through. The basic question under this heading is "To what extent does the teacher actually teach what he intended to teach?" While there currently is no reason to expect that teachers should teach everything they originally intend to teach, it is logical to expect that some portion of what they cover in class corresponds to their original plans. The data to answer the teacher follow-through question are derived from responses to the first two audit questions (see Table 1).

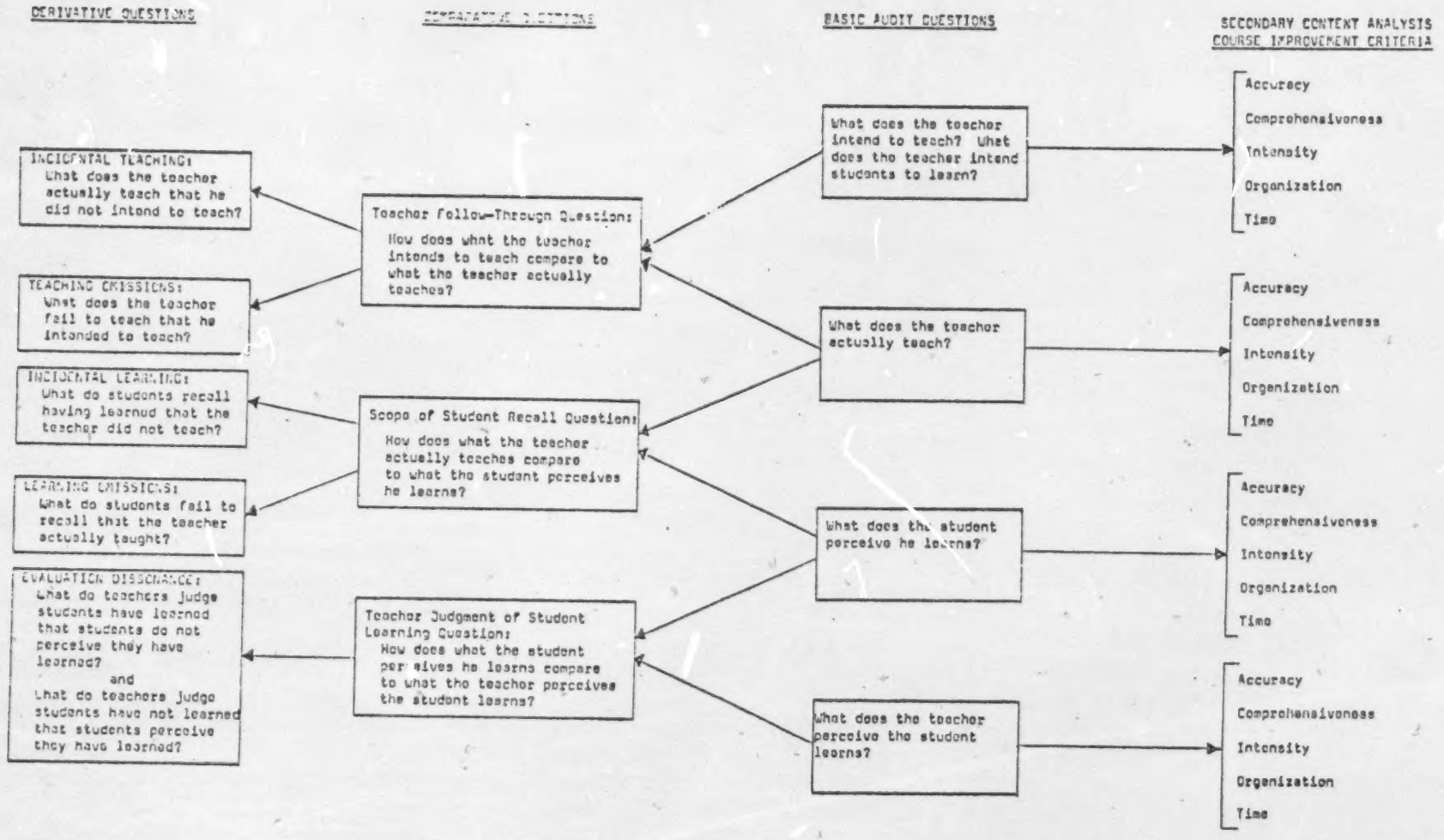
To gain a more exact understanding of the relationship between instructional intentions and actualities, the teacher follow-through question can be sub-divided into two parts:

1. What does the teacher actually teach that he did not intend to teach?

2. What does the teacher fail to teach that he intended to teach?

TABLE 1

OUTLINE OF AN INSTRUCTIONAL AUDIT


DERIVATIVE QUESTIONS
COMPARATIVE QUESTIONS
BASIC AUDIT QUESTIONS
SECONDARY CONTENT ANALYSIS
COURSE IMPROVEMENT CRITERIA
INCIDENTAL TEACHING:
What does the teacher actually teach that he did not intend to teach?
TEACHING OMISSIONS:
What does the teacher fail to teach that he intended to teach?
INCIDENTAL LEARNING:
What do students recall having learned that the teacher did not teach?
LEARNING OMISSIONS:
What do students fail to recall that the teacher actually taught?
EVALUATION DISSONANCE:
What do teachers judge students have learned that students do not perceive they have learned?
and
What do teachers judge students have not learned that students perceive they have learned?
Teacher Follow-Through Question:
How does what the teacher intends to teach compare to what the teacher actually teaches?
Scope of Student Recall Question:
How does what the teacher actually teaches compare to what the student perceives he learns?
Teacher Judgment of Student Learning Question:
How does what the student perceives he learns compare to what the teacher perceives the student learns?
What does the teacher intend to teach? What does the teacher intend students to learn?
What does the teacher actually teach?
What does the student perceive he learns?
What does the teacher perceive the student learns?
Accuracy
Comprehensiveness
Intensity
Organization
Time
Accuracy
Comprehensiveness
Intensity
Organization
Time
Accuracy
Comprehensiveness
Intensity
Organization
Time
Accuracy
Comprehensiveness
Intensity
Organization
Time

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Answers to the first sub-question provide information concerning what I call "incidental teaching," while answers to the second sub-question refer to "teaching omissions." Data on incidental teaching and teaching omissions can assist teachers in assessing their own effectiveness.

Scope of student recall. The data to answer the scope of student recall question derive from the second and third audit questions (see Table 1). The basic question is "To what extent does the student perceive he learns what the teacher actually taught?" I assume it is desirable in most cases for students to recall some portion of what the teacher teaches. Thus, answers to this question help determine how well students are functioning with particular course content.

Sub-questions related to the scope of student recall question include:

1. What do students recall having learned that the teacher did not teach?

2. What do students fail to recall that the teacher actually taught?

Answers to these sub-questions provide information on "incidental learning" and "learning omissions."

Teacher judgement of student learning. This question is based on a comparison of data derived from audit questions three and four (see Table 1). The question is "To what extent does the teacher's judgment of what a student has learned correspond to the student's perception of what he has learned?" I maintain that, for a course to be fairly evaluated and effective, the two should correspond quite closely.

Sub-questions related to the teacher judgment of student learning question include:

1. What do teachers judge students have learned that students do not perceive they have learned?

2. What do teachers judge students have not learned that students perceive they have learned.

Answers to both of these sub-questions concern "evaluation dissonance." Teachers as well as external evaluators need to understand more about the

extent to which evaluation dissonance occurs in classrooms, since the consequences for students of misperceptions of their learning can influence their futures.

Time. In addition to the three comparative questions and their subquestions, Phase 4 of the audit can involve an investigation of the relationship between the time the teacher spends on specific content items (which the auditor has noted as part of Phase 2) and student recall of the items. Borrowing from the theoretical work of Annegret Harnischfeger and David Wiley, the hypothesis is advanced that the more time a teacher spends on a given content item, the more frequently students will recall that item during debriefing and/or formal testing.[31] Testing this hypothesis can shed light on the connection between "exposure to learning" and learning.

Secondary Content Analysis -- Phase 5

To gain a clearer idea of the nature of course effectiveness, the data collected during Phase 2 again can be analyzed, this time using four "course improvement criteria" instead of the units of content to guide the analysis. Several of these criteria are similar to ones mentioned by George Posner in his review of curriculum structuring factors.[32] The course improvement criteria include the following (also refer to Table 1):

1. accuracy of content
2. extensiveness of content
3. intensiveness of content
4. organization of content

All of the criteria pertain both to lesson content (what the teacher actually teaches) and the content of student debriefings (what students perceive they learn).

Whereas Phase 4 primarily involved internal comparisons, the first three course improvement criteria require external comparisons. The accuracy, extensiveness, and intensiveness of content are compared to the subject matter field itself. Since an auditor may not possess enough expertise in certain subject matter fields to conduct this part of the analysis, it may be necessary to enlist the services of a specialist or curriculum consultant.

Determining the accuracy of the data collected in Phase 2 is a relatively clear-cut, though perhaps time-consuming, task. Nevertheless, the

virtual absence of research data on such a seemingly basic element of teaching -- the accuracy of what is taught -- justifies the effort. The extensiveness of course content relates to the scope or breadth of the subject matter covered during the audit as compared to the possible range of material. If the two-week unit being audited is entitled "The African Heritage of American Blacks" and the content of the unit is limited to discussions of the slave trade and the absence of sophisticated traditional African civilizations, the unit can be criticized both for inaccuracies and lack of extensiveness.

Intensiveness pertains to the depth or level of detail of content coverage. Naming the branches of government obviously is less intensive a civics lesson than discussing the evolution of the democratic system and the powers and perquisites of each branch.

Applying the three criteria to the data collected in Phase 2 is not as purely objective an exercise as the analyses in previous phases. Judgments concerning all three are open to debate by subject matter experts. Still, the attempt to review systematically the accuracy, extensiveness, and intensiveness of course content must be made if teachers are to confront the task of course improvement. Educators cannot take for granted that what is taught or learned is uniformly accurate, appropriately broad, or acceptably detailed.

The fourth criterion -- the organization of content -- concerns the manner in which teachers and students sequence what is taught and, subsequently what is recalled. As was true before, relatively little research has been done on the organization of course content or student recall. George Posner and Kenneth Strike provide a helpful model of five possible ways to sequence content, but to date they have not reported on any classroom applications of the model.[33] Understanding how students as well as teachers organize subject matter may be a key to more effective instructional planning.

Conclusion

I have tried to outline the major components of a new technique for use in professional development activities and course improvement. The instructional audit does not require sophisticated statistical methods, but it does involve an investment of time and energy. The underlying assumption is that all teachers can benefit from periodic analyses of their treatment of subject matter. The following chapters report on some specific results of completed audits.

A number of important questions remain to be answered, if the audit is to become a truly useful tool for course improvement. They include:

1. Is the audit appropriate for all grade levels? Can elementary-age children, for example, provide worth while debriefing data?

2. Is the audit appropriate for all kinds of instructional methods? What about individualized instruction or open education where verbal interactions are decentralized and difficult to monitor?

3. Can the audit be used to compare different courses?

4. Can parts of the audit be used effectively without involving other elements?

5. What is the optimal length of time for an audit?

While questions of feasibility and desirability also remain to be answered, there is sufficient reason, on the basis of field studies, to expect that the audit will fill a void among existing approaches to professional development and course improvement. The strength of the audit ultimately rests on its systematic series of questions, the provision for gathering student perceptions of what they learn, and the overall emphasis on course content.

1. Elliot W. Eisner, "On the Uses of Educational Connoisseurship and Criticism for Evaluating Classroom Life," Teachers College Record, Vol. 78, No. 3, (February 1977), p. 346.

2. Walter Doyle, "Paradigms for Teacher Effectiveness Research" (unpublished manuscript presented at the 1975 Annual Meeting of the American Educational Research Association in Washington, D. C.).

3. An exception to this statement can be found in some military technical instruction where instructors have no involvement in determining intended learning outcomes and are unable to alter prestated objectives.

4. Benjamin S. Bloom, "Some Theoretical Issues Relating to Educational Evaluation" in Ralph W. Tyler (ed.), Educational Evaluation: New Roles, New Means, The Sixty-eighth Yearbook of the National Society for the Study of Education (Chicago: The University of Chicago Press, 1969), p. 27.

5. John A. Zahorik, "Teachers' Planning Models," Educational Leadership, Vol. 33, No. 2 (November 1975), pp. 134-139.

6. Thomas L. Good and Jere E. Brophy, Looking in Classrooms (New York: Harper & Row, Publishers, 1973), p. 24.

7. Barak Rosenshine, "Teaching Behaviors Related to Pupil Achievement: A Review of Research" in Ian Westbury and Arno A. Bellack (eds.), Research into Classroom Processes: Recent Developments and Next Steps (New York: Teachers College Press, 1971), pp. 86-87.

8. J. C. Fortune, A Study of the Generalities of Presenting Behaviors in Teaching, Project No. 6-8468, U.S. Office of Education (Memphis: Memphis State University, 1967).

9. Barak Rosenshine, "Classroom Instruction" in N. S. Gage (ed.), The Psychology of Teaching Methods, The Seventy-fifth Yearbook of the National Society for the Study of Education, Part I (Chicago: The University of Chicago Press, 1976), p. 348.

10. James J. Gallagher, "A 'Topic Classification System' for Classroom Interaction" in James J. Gallagher, Graham A. Nuthall, and Barak Rosenshine (eds.), Classroom Observation, AERA Monograph Series on Curriculum Evaluation, Number 6 (Chicago: Rand McNally and Company, 1970), p. 41.

11. Beverly Jeanne Armento, "Teacher Behaviors Related to Student Achievement on a Social Science Concept Test" (A paper presented at the 1976 Meeting of the American Educational Research Association in San Francisco, California).

12. Ibid., p. 10.

13. For an example of educational criticism, see Thomas E. Barone, "Of Scott and Lisa and Other Friends" (unpublished study by one of Eisner's doctoral students).

14. Warren H. Solomon, "Participant Observation and Lesson Plan Analysis: Implications for Curriculum and Instructional Research" (paper presented at the American Educational Research Association Convention in 1971).

15. I use the term "perception" to distinguish what an individual feels he learns or does from what others feel he learns or does. An interesting report on work in the area of student perceptions in school settings is contained in Richard E. Snow's "Representative and Quasi-Representative Designs for Research on Teaching," Review of Educational Research, Vol. 44, No. 3 (Summer 1974), p. 266.

16. Richard H. Lindeman, Educational Measurement (Glenview, Illinois: Scott, Foresman and Company, 1967).

17. Christopher Jencks, et. al., Inequality (New York: Harper Colophon Books, 1972), pp. 54-55.

18. William G. Spady, "The Impact of School Resources on Students" in Fred N. Kerlinger (ed.), Review of Research in Education (Itasca, Illinois: F. E. Peacock Publishers, Inc., 1973), P. 137.

19. Herbert J. Walberg, "Educational Process Evaluation" in Michael W. Apple, Michael J. Subkoviak, and Henry S. Lufler, Jr. (eds.), Educational Evaluation: Analysis and Responsibility (Berkeley: McCutchan Publishing Corporation, 1974), p. 238.

20. B. S. Bloom, "Thought-Processes in Lectures and Discussions," The Journal of General Education, Vol. 7, No. 2 (January 1953), pp. 160-169.

21. Benjamin S. Bloom, "Some Theoretical Issues Relating to Educational Evaluation," pp. 38-39.

22. Daniel L. Duke, "Debriefing for Curriculum Research and Course Improvement" (in press).

23. Thomas L. Good and Jere E. Brophy, Looking in Classrooms, pp. 25-26.

24. Decker F. Walker, "Toward Comprehension of Curricular Realities" (in press).

25. Barak Rosenshine, "Classroom Instruction," p. 352.

26. Barak Rosenshine, "Teaching Behaviors Related to Pupil Achievement: A Review of Research," pp. 51-98. Also see Rosenshine's "Evaluation of Classroom Instruction" in Madan Mohan and Ronald E. Hull (eds.), Teaching Effectiveness (Englewood Cliffs, N.J.: Educational Technology Publications, 1975), pp. 257-286.

27. Richard Bloom, James A. Dunn, and William C. Morse, "Data-Source Concensus: A Fundamental Problem in Classroom Research," Journal of Educational Measurement, Vol. 1, No. 2 (December 1964), p. 119.

28. The following chapter by Irene Muzio describes a modified instructional audit to be used in a collegial evaluation framework.

29. Refer to the author's previously cited article entitled "Debriefing for Curriculum Research and Course Improvement."

30. Eventually it would be interesting to experiment with peer or parent debriefers, rather than using school personnel or outsiders. The only person who definitely should not debrief students for audit purposes is the teacher himself. When an audit is not being conducted, however, the teacher may wish to use debriefing to supplement regular evaluation procedures.

31. David E. Wiley and Annegret Harnischfeger, "Explosion of a Myth: Quantity of Schooling and Exposure to Instruction, Major Educational Vehicles," Educational Researcher, Vol. 3, No. 4 (April 1974), pp. 7-12.

32. George J. Posner, "The Extensiveness of Curriculum Structure: A Conceptual Scheme," Review of Educational Research, Vol. 44, No. 4 (Fall 1974), pp. 401-407.

33. George J. Posner and Kenneth A. Strike, Sequencing Content: What Are the Alternatives? Research Report No. 2 (Ithaca, N.Y.: Department of Education, Cornell University, May 1975).